

**EXHIBIT 1**

## VITA

NAME: Joseph Oliver Falkingham, III

BIRTH DATE AND PLACE: May 3, 1942 - Oakland, California

## EDUCATION:

1970 Intern in Clinical Laboratory Medicine, David Grant USAF Medical Center, Travis AFB, California

1969 Ph.D., Microbiology, University of California, Berkeley, California

1964 A.B., Bacteriology, University of California, Berkeley, California

## PROFESSIONAL EMPLOYMENT:

1994-present Professor of Microbiology  
Department of Biology  
Fralin Biotechnology Center  
Virginia Polytechnic Institute and State University  
Blacksburg, VA 24061

1980-1993 Associate Professor of Microbiology (tenured)  
Department of Biology  
Virginia Polytechnic Institute and State University  
Blacksburg, VA 24061

1974-1980 Assistant Professor of Microbiology  
Department of Biology  
Virginia Polytechnic Institute and State University  
Blacksburg, VA 24061

1972-1974 Fellow in Microbiology and Research Associate  
Department of Microbiology  
University of Alabama Medical Center  
Birmingham, Alabama 35294  
Laboratory of Dr. Roy Curtiss, III

1971-1972 Captain USAF (BSC)  
Chief, Laboratory Services  
USAF Hospital  
Castle AFB, California 95343

1969-1971 Captain USAF (BSC)  
Chief, Chemistry and Special Chemistry Section  
Department of Pathology  
David Grant USAF Medical Center  
Travis AFB, California 94535

1965-1969 Predoctoral Trainee, USPHS and Graduate Teaching Assistant  
Department of Bacteriology, University of California  
Berkeley, California 94720  
Laboratory of Dr. Alvin J. Clark

1964-1965 Laboratory Technician and Teaching Assistant  
Department of Soils and Plant Nutrition  
University of California  
Berkeley, California 94720  
Laboratory of Dr. A. Douglas MacLaren

**HONORS**

1999      Symposium Speaker, European Congress of Clinical Microbiology and Infectious Diseases  
Berlin, Germany

1998      Symposium Speaker, American Thoracic Society/American Lung Association  
Chicago, IL

1997      Symposium Speaker, Australian Society for Microbiology  
Adelaide, Australia

1993      Invited Lecturer, Society for General Microbiology  
Exeter, United Kingdom.

1986      Divisional Lecturer, American Society of Microbiology,  
Washington, D.C.

**CONSULTANT**

1993 - present      Chief Scientific Advisor  
Dominion Biosciences, Inc., Blacksburg, VA

1976 - present      Scientific Consultant,  
Sybron Chemicals, Inc., Salem, VA

1979 - 1993      Lecturer,  
Patent Resources Group, Inc., Washington, D.C.

**PATENTS**

U.S. Patent Number 5,527,677  
Water Sample Viral Contamination Detection System  
M. Ijzerman, C. Hagedorn, III, and J.O. Falkinham, III  
Issued 18 June 1996

U.S. Patent Application No. 09/063/898  
Non-Obligate Predatory Bacterium Burkholderia casidae  
J.O. Falkinham, III, C.C. Cain, and E.J. Casida  
Filed: 23 April 1998

**ADDITIONAL PROFESSIONAL ACTIVITIES**

1986      Lecturer in Genetic Engineering, U.S. Patent and Trademark Office,  
U.S. Department of Commerce, Washington, D. C.

1986      Lecturer in Biotechnology, Office of Technology Assessment,  
U. S. Congress, Washington, D. C.

1982      Visiting Scholar and Lecturer, Pennsylvania State University,  
Pittsburgh, Pennsylvania

1978      Invited Scientist and Lecturer, Polish Academy of Sciences and  
University of Warsaw, Warsaw, Poland.

1975      Visiting Scientist, Department of Microbiology,  
University of Virginia Medical School, Charlottesville.

## PUBLICATIONS

### Books

Wallace, B. and J.O. Falkinham, III. 1997. *The Study of Gene Action.* Cornell University Press.

### Review Articles

Falkinham, J.O., III. 1996. Epidemiology of infection by nontuberculous mycobacteria. *Clin. Microbiol. Revs.* 9:177-215.

Falkinham, J.O., III. 1998. Biomanufacturing: the critical issues for product commercialisation. *J. Commercial Biotechnol.* 5:113-122.

### Editor

Rastogi, N. and J.O. Falkinham, III. 1996. Solving the Dilemma of Antimycobacterial Chemotherapy, 13th Forum in Microbiology, Research Microbiology 147: Issues 1-2, pages 1-95.

### Chapters in Books

Low, K.B. and J.O. Falkinham, III. 1974. F-prime elements of *Escherichia coli* K-12, p. 593-596. In: A.K. Laskin and H. Lechavalier (ed.), *Handbook of Microbiology*, Chemical Rubber Co., Cleveland, OH.

Curtiss, R., III. F.L. Macrina, and J.O. Falkinham, III. 1974. *Escherichia coli*: An overview, p. 113-134. In: R.C. King (ed.), *Handbook of Genetics*, Plenum Press, New York, NY.

Curtiss, R., III. R.G. Fenwick, Jr., R. Goldschmidt, and J.O. Falkinham, III. 1976. The mechanism of conjugation, p. 109-134. In: S. Mitsuhashi (ed.), *Transferable Drug Resistance Factor R*, University Park Press, Baltimore, MD.

Falkinham, J.O., III., B.C. Parker, and H. Gruft. 1978. Isolation of potentially pathogenic mycobacteria from coastal marine and fresh waters of the southeastern United States, with observations on their ecology, p. 166-188. In: W. Hess (ed.), *Proceedings of the Seafood Institute Seminar*, '77, Virginia Polytechnic Institute and State University, Blacksburg, VA.

Falkinham, J.O., III. B.C. Parker, K.L. George, S.L. Wendt, and H. Gruft. 1979. Epidemiology and ecology of the *Mycobacterium avium* - *M. intracellulare*, and *M. scrofulaceum* (MAIS) group in the United States, p. 1-18. In: J. Vaillier (ed.), *Colloque International sur les Mycobactéries Atypiques*. l'Université Claude-Bernard, Lyon, France.

George, K.L. and J.O. Falkinham, III. 1989. Aerosolization of mycobacteria, p. 211-220. In: P. Comtois (ed.) *Aerobiology, Health and Environment*. Centre de Recherches Ecologiques de Montreal, Montreal, Canada.

Falkinham, J.O., III. 1989. Factors influencing the aerosolization of mycobacteria, p. 17-26. In: E. C. Monahan and M. A. Van Patten (eds.), *Climate and Health Implications of Bubble-Mediated Sea-Air Exchange*. Sea Grant Marine Science Institute, University of Connecticut, Groton, CT.

Crawford, J.T. and J.O. Falkinham, III. 1990. *Plasmids of the Mycobacterium avium complex*, p. 97-119. In: J.J. McFadden (ed.), *Molecular Biology of the Mycobacteria*. Surrey University Press, London, United Kingdom.

Falkinham, J.O., III, K.L. George, M.A. Ford and B.C. Parker. 1990. Collection and characteristics of mycobacteria in aerosols, p. 71-81. In: P.R. Morey, J.C. Feeley, Sr., and J.A. Otten (eds.), *Biological Contaminants in Indoor Environments*. American Society for Testing and Materials, Philadelphia, PA.

Falkinham, J.O., III. 1992. The impact of AIDS on leprosy, tuberculosis, and other mycobacterial diseases, p. 61-83. In: B. Wallace, N.R. Krieg, and A. Distler (eds.), *AIDS the Modern Plague*. Virginia Polytechnic Institute and State University, Blacksburg, VA.

Falkinham, J.O., III. 1993. Nucleic acid probes, p. 701-710. In: P. Gerhardt (ed.), *Methods for General and Molecular Bacteriology*, American Society for Microbiology Press, Washington, D.C.

Falkinham, J.O., III and J.T. Crawford. 1994. Plasmids, p. 185-198. In: B.R. Bloom (ed.), *Tuberculosis: Pathogenesis, Protection, and Control*, American Society for Microbiology Press, Washington, D.C.

Falkinham, J.O., III. 1995. Molecular epidemiology techniques for the study of *Mycobacterium avium* complex infection, p. 23-44. In: J.A. Korvick and C.A. Benson (eds.), *Mycobacterium avium complex Infection: Progress in Research and Treatment*, Marcel Dekker, Inc., New York, NY.

Falkinham, J.O., III. 1996. Probe technology and automation, p. 127-147. In: W.P. Olson (ed.), *Automated Microbial Identification and Quantitation*, Interpharm Press, Buffalo Grove, IL.

Falkinham, J.O., III. 1998. Transmission of mycobacteria, p.178-209. In: P.R. Gangadharan and P.A. Jenkins (eds.), *Mycobacteria*, Chapman and Hall, New York, NY.

Jensen, D.M. and J.O. Falkinham, III. 1996. Drug resistance mechanisms in *Mycobacterium tuberculosis* and *Mycobacterium avium*, p. 295-307. In: S.G. Pandalai (ed.), *Recent Research Developments in Antimicrobial Agents and Chemotherapy*, Volume 1, Research Signpost, Trivandrum.

Falkinham, J.O., III. 1999. Molecular epidemiology: other mycobacteria, p. 136-160. In: C. Ratledge and J.W. Dale (eds.), *Mycobacteria: Molecular Biology and Virulence*. Blackwell Scientific, Oxford.

**Papers in Journals**

Falkinham, J.O., III and A.J. Clark. 1974. Linkage relationships in a double male strain of *Escherichia coli* K-12. *Genetics* 78:633-644.

Falkinham, J.O., III and R. Curtiss, III. 1976. Isolation and characterization of conjugation-deficient mutants of *Escherichia coli* K-12. *J. Bacteriol.* 126:1194-1206.

Falkinham, J.O., III. 1977. *Escherichia coli* K-12 mutants with alternate requirements for vitamin B6 and branched-chain amino acids and lacking transaminase C. *J. Bacteriol.* 130:566-568.

Falkinham, J.O., III, B.C. Parker, and H. Gruft. 1979. Progress Report: isolation of atypical mycobacteria from different regions of the United States. *Bull. Intl. Union Against Tuberculosis* 54:339-341.

Falkinham, J.O., III. 1979. Gene ion and plasmid inheritance in *Escherichia coli* K-12. *J. Bacteriol.* 139:1054-1057.

Wendt, S.L., B.C. Parker, and J.O. Falkinham, III. 1979. Occurrence and distribution of human bacterial pathogens in Virginia surface waters, p. 1-68. *Bulletin 118*. Virginia Water Resources Research Center, Blacksburg, VA.

Falkinham, J.O., III. 1979. Identification of a mutation affecting an alanine- $\alpha$ -ketoisovalerate transaminase activity in *Escherichia coli* K-12. *Molec. Genet.* 176:147-149.

Gruft, H., A. Loder, M. Osterhout, B.C. Parker, and J.O. Falkinham, III. 1979. Postulated sources of atypical mycobacterial infections: estuaries and ocean waters. *Am. Rev. Respir. Dis.* 120:1385-1388.

Falkinham, J.O., III, B.C. Parker, and H. Gruft. 1980. Epidemiology of infection by nontuberculous mycobacteria. I. Geographic distribution in the eastern United States. *Am. Rev. Respir. Dis.* 121:931-937.

George, K.L., B.C. Parker, H. Gruft, and J.O. Falkinham, III. 1980. Epidemiology of infection by nontuberculous mycobacteria. II. Growth and survival in natural waters. *Am. Rev. Respir. Dis.* 122:89-94.

Wendt, S.L., K.L. George, B.C. Parker, H. Gruft, and J.O. Falkinham, III. 1980. Epidemiology of infection by nontuberculous mycobacteria. III. Isolation of potentially pathogenic mycobacteria from aerosols. *Am. Rev. Resp. Dis.* 122:259-263.

Winfield, S.L. and J.O. Falkinham, III. 1981. Effect of *recA* and *polA* mutations on gene duplication in *Salmonella typhimurium*. *Mutation Res.* 91:15-20.

Hoffman, P.S. and J.O. Falkinham, III. 1981. Induction of tryptophanase in short cells and swarm cells of *Proteus vulgaris*. *J. Bacteriol.* 148:736-738.

Gruft, H., J.O. Falkinham, III and B.C. Parker. 1981. Recent experience in the epidemiology of nontuberculous mycobacterial diseases. *Rev. Infect. Dis.* 3:990-996.

Falkinham, J.O., III, K.L. George, B.C. Parker, and H. Gruft. 1983. Uric acid utilization by *Mycobacterium intracellulare* and *M. scrofulaceum* isolates. *J. Bacteriol.* 155:36-39.

Parker, B.C., M.A. Ford, H. Gruft, and J.O. Falkinham, III. 1983. Epidemiology of infection by nontuberculous mycobacteria. IV. Preferential aerosolization of *Mycobacterium intracellulare* from natural waters. *Am. Rev. Respir. Dis.* 128:652-656.

Falkinham, J.O., III, K.L. George, B.C. Parker, and H. Gruft. 1984. In vitro susceptibility of human and environmental isolates of *Mycobacterium avium*, *M. intracellulare*, and *M. scrofulaceum* to heavy metal salts and oxyanions. *Antimicrob. Agents Chemother.* 25:137-139.

Meissner, P.S. and J.O. Falkinham, III. 1984. Plasmid-encoded mercuric reductase in *Mycobacterium scrofulaceum*. *J. Bacteriol.* 157:669-672.

Falkinham, J.O., III and P.S. Hoffman. 1984. Unique developmental characteristics of the swarm and short cells of *Proteus vulgaris* and *Proteus mirabilis*. *J. Bacteriol.* 158:1037-1040.

Brooks, R.W., B.C. Parker, H. Gruft, and J.O. Falkinham, III. 1984. Epidemiology of infection by nontuberculous mycobacteria. V. Numbers in eastern United States soils and correlation with soils characteristics. *Am. Rev. Respir. Dis.* 130:630-633.

Brooks, R.W., K.L. George, B.C. Parker, and J.O. Falkinham, III. 1984. Recovery and survival of nontuberculous mycobacteria under various growth and decontamination conditions. *Canad. J. Microbiol.* 30:1112-1117.

Meissner, P.S. and J.O. Falkinham, III. 1986. Plasmid DNA profiles as epidemiological markers for clinical and environmental isolates of *Mycobacterium avium*, *M. intracellulare* and *M. scrofulaceum*. *J. Infect. Diseases.* 153:325-331.

George, K.L. and J.O. Falkinham, III. 1986. Selective medium for the isolation and enumeration of *Mycobacterium avium*, *M. intracellulare*, and *M. scrofulaceum*. *Canad. J. Microbiol.* 32:10-14.

Mayer, B.K. and J.O. Falkinham, III. 1986. Catalase activity and its heat inactivation for differentiation of *Mycobacterium avium*, *M. intracellulare*, and *M. scrofulaceum*. *Int. J. System. Bacteriol.* 36:207-212.

George, K.L., A.T. Pringle, and J.O. Falkinham, III. 1986. The cell surface of *Mycobacterium avium*-*intracellulare* and *M. scrofulaceum*: effect of specific chemical modifications on cell surface charge. *Microbios* 45:199-207.

Fry, K.L., P.S. Meissner, and J.O. Falkinham, III. 1986. Epidemiology of infection by nontuberculous mycobacteria. VI. Identification and use of epidemiological markers for studies of *Mycobacterium avium*, *M. intracellulare* and *M. scrofulaceum*. *Am Rev. Respir. Dis.* 134:39-43.

Mayer, B.K. and J.O. Falkinham, III. 1986. Superoxide dismutase activity of *Mycobacterium avium*, *M. intracellulare* and *M. scrofulaceum*. *Infect. Immun.* 53:631-635.

Pittinger, C.A., A.L. Buikema, Jr. and J.O. Falkinham, III. 1987. In situ variations in oyster mutagenicity and tissue concentrations of polycyclic aromatic hydrocarbons. *Environ. Tox. Chem.* 6:51-60.

Martin, E.C., B.C. Parker and J.O. Falkinham, III. 1987. Epidemiology of infection by nontuberculous mycobacteria. VII. Absence of mycobacteria in southeastern groundwaters. *Am. Rev. Respir. Dis.* 136:344-348.

Erardi, F.X., M.L. Failla and J.O. Falkinham, III. 1987. Plasmid-encoded copper resistance and precipitation by *Mycobacterium scrofulaceum*. *Appl. Environ. Microbiol.* 53:1951-1954.

Erardi, F.X., M.L. Failla and J.O. Falkinham, III. 1989. Accumulation and transport of cadmium by tolerant and susceptible *Mycobacterium scrofulaceum*. *Antimicrob. Agents Chemother.* 33:350-355.

George, K.L. and J.O. Falkinham, III. 1989. Identification of cytoplasmic membrane protein antigens of *Mycobacterium avium*, *M. intracellulare*, and *M. scrofulaceum*. *Canad. J. Microb.* 35:529-534.

Pethel, M.L. and J.O. Falkinham, III. 1989. Plasmid-influenced changes in *Mycobacterium avium* catalase activity. *Infect. Immun.* 57:1714-1718.

Falkinham, J.O., III, K.L. George and B.C. Parker. 1989. Epidemiology of infection by nontuberculous mycobacteria. VIII. Absence of mycobacteria in chicken litter. *Am. Rev. Respir. Dis.* 139:1347-1349.

Gross, W.B., J.O. Falkinham, III and J.B. Payeur. 1989. Effect of social environment and antibody responsiveness on *Mycobacterium avium* infection in chickens. *Avian Diseases* 33:411-415.

Stormer, R.S. and J.O. Falkinham, III. 1989. Differences in antimicrobial susceptibility of colonial variants of *Mycobacterium avium*. *J. Clin. Microbiol.* 27:2459-2465.

Carlisle, G.C. and J.O. Falkinham, III. 1989. Enzyme activities and antibiotic susceptibility of colonial variants of *Bacillus subtilis* and *Bacillus licheniformis*. *Appl. Environ. Microbiol.* 55:3026-3028.

Falkinham, J.O., III. 1990. Arylsulfatase activity of *Mycobacterium avium*, *M. intracellulare*, and *M. scrofulaceum*. *Int. J. System. Bacteriol.* 40:66-70.

Jucker, M.T. and J.O. Falkinham, III. 1990. Epidemiology of infection by nontuberculous mycobacteria. IX. Evidence for two DNA homology groups among small plasmids in *M. avium*, *M. intracellulare*, and *M. scrofulaceum*. *Am. Rev. Respir. Dis.* 142:858-862.

Via, L.E. and J.O. Falkinham, III. 1991. Isolation of restriction fragments from large plasmids recovered from bacteria with multiple plasmids. *BioTechniques* 11:442-443.

Taber, R.A., M.A. Thielen, J.O. Falkinham, III, and R.H. Smith. 1991. *Mycobacterium scrofulaceum*: a bacterial contaminant in plant tissue culture. *Plant Sci.* 78:231-236.

Kirschner, R.A., Jr., B.C. Parker, and J.O. Falkinham, III. 1992. Epidemiology of infection by nontuberculous mycobacteria. X. *Mycobacterium avium*, *M. intracellulare*, and *M. scrofulaceum* in acid, brown-water swamps of the southeastern United States and their association with environmental variables. *Am. Rev. Respir. Dis.* 145:271-275.

Morrissey, A.B., T.O. Aisu, J.O. Falkinham, III, P.P. Eriki, J.J. Ellner, and T.M. Daniel. 1992. Absence of *Mycobacterium avium* complex in patients with AIDS in Uganda. *J. AIDS* 5:477-478.

Arbeit, R.D., A. Slutsky, T.W. Barber, J.N. Maslow, S. Niemczyk, J.O. Falkinham, III, G.T. O'Connor, and C.F. von Reyn. 1993. Genetic diversity among strains of *Mycobacterium avium* causing monoclonal and polyclonal bacteremia in patients with AIDS. *J. Infect. Dis.* 167:1384-1390.

von Reyn, C.F., R.D. Waddell, T. Eaton, R.D. Arbeit, J.N. Maslow, T.W. Barber, R.J. Brindle, C.F. Gilks, J. Lumio, J. Lähdevirta, A. Ranki, D. Dawson, and J.O. Falkinham, III. 1993. Isolation of *Mycobacterium avium* complex from water in the United States, Finland, Zaire, and Kenya. *J. Clin. Microbiol.* 31:3227-3230.

Ijzerman, M.M., J.O. Falkinham, III, and C. Hagedorn. 1993. A liquid, colorimetric presence-absence coliphage detection method. *J. Virol. Methods* 45:229-234.

Ijzerman, M.M., J.O. Falkinham, III, R.B. Reneau, Jr., and C. Hagedorn. 1994. Field evaluation of two colorimetric coliphage detection methods. *Appl. Environ. Microbiol.* 60:826-830.

von Reyn, C.F., J.N. Maslow, T.W. Barber, J.O. Falkinham, III, and R.D. Arbeit. 1994. Persistent colonisation of potable water as a source of *Mycobacterium avium* infection in AIDS. *Lancet* 343:1137-1141.

Reddy, V.M., K. Parikh, J. Luna-Herrera, J.O. Falkinham, III, S. Brown, and P.R.J. Gangadharam. 1994. Comparison of virulence of *Mycobacterium avium* complex (MAC) strains isolated from AIDS and non-AIDS patients. *Microbial Pathogen.* 16:121-130.

Falkinham, J.O., III. 1994. Epidemiology of *Mycobacterium avium* infection in the pre- and post-HIV era. *Res. Microbiol.* 145:169-172.

Via, L.E. and J.O. Falkinham, III. 1995. Comparison of methods for isolation of *Mycobacterium avium* complex DNA for use in PCR and RAPD fingerprinting. *J. Microbiol. Meth.* 21:151-161.

Eaton, T., J.O. Falkinham, T.O. Aisu, and T.M. Daniel. 1995. Isolation and characteristics of *Mycobacterium avium* complex from water and soil samples in Uganda. *Tubercle Lung Dis.* 76:570-574.

Eaton, T., J.O. Falkinham, III, and C.F. von Reyn. 1995. Recovery of *Mycobacterium avium* from cigarettes. *J. Clin. Microbiol.* 33:2757-2758.

Warek, U. and J.O. Falkinham, III. 1996. Action of clofazimine on the *Mycobacterium avium* complex. *Res. Microbiol.* 147:43-48.

Rastogi, N. and J.O. Falkinham, III. 1996. Solving the dilemma of antimycobacterial chemotherapy. *Res. Microbiol.* 147:7-10.

von Reyn, C.F., R.D. Arbeit, A.N.A. Tosteson, M.A. Ristola, T.W. Barber, R. Waddell, C.H. Sox, R.J. Brindle, C.P. Gilks, J. Edwards, J.O. Falkinham, III, G.T. O'Connor. 1996. The international epidemiology of disseminated *Mycobacterium avium* complex infection in AIDS. *AIDS* 10:1025-1032.

Ristola, M.A., C.F. von Reyn, R.D. Arbeit, H. Soini, J. Lumio, A. Ranki, S. Bühler, R. Waddell, A.N.A. Tosteson, J.O. Falkinham, III, and C.H. Sox. 1999. High rates of disseminated infection due to non-tuberculous mycobacteria among AIDS patients in Finland. *J. Infection* 39:61-67.

Kirschner, R.A., B.C. Parker, and J.O. Falkinham, III. 1999. Humic and fulvic acids stimulate the growth of *Mycobacterium avium*. *FEMS Microbiol. Ecol.* 30:327-332.

Taylor, R.H., J.O. Falkinham, III, C.D. Norton, and M.W. LeChevallier. 2000. Chlorine-, Chloramine-, Chlorine Dioxide- and Ozone-susceptibility of *Mycobacterium avium*. *Appl. Environ. Microbiol.* 66:1702-1705.

Cain, C.C., A.T. Henry, R.H. Waldo, III, L.J. Casida, Jr., and J.O. Falkinham, III. 2000. Identification and characteristics of a novel *Burkholderia* strain with broad-spectrum antimicrobial activity. *Appl. Environ. Microbiol.* 66:4139-4141.

Stanek, J.E. and J.O. Falkinham, III. 2001. Rapid coliphage detection assay. *J. Virol. Meth.* 91:93-98.

Falkinham, J.O., III, C.D. Norton, and M.W. LeChevallier. 2001. Factors influencing numbers of *Mycobacterium avium*, *Mycobacterium intracellulare*, and other mycobacteria in drinking water distribution systems. *Appl. Environ. Microbiol.* 67:1225-1231.

Cowan, H. E. and J. O. Falkinham, III. In Press. A luciferase-based method for assessing chlorine-susceptibility of *Mycobacterium avium*. *J. Microbiol. Meth.*

**RESEARCH GRANTS AND FINANCIAL SUPPORT**

1999-2002 Physiological Ecology of Mycobacteria  
Applied Microbiology and Genetics, \$ 100,000

1998-2001 Genetic Studies of *Burkholderia* *casidae* strain 2.2 N  
Dominion Biosciences, Inc., \$ 101,000

1997-1999 PCR Detection of Mycobacteriosis in Aquaculture of Fish  
NOAA, Sea Grant Program, \$ 120,000.

1996-1999 Occurrence and Control of *Mycobacterium avium* Complex,  
American Water Works Association Research Foundation,  
\$ 250,000.

1996-1998 Predator Fungicide Development,  
Dominion Biosciences, Inc., \$ 175,000.

1993-1995 Commercial Development of a Rapid Coliphage Assay,  
Virginia Center for Innovative Technology, \$ 128,515.

1991-1994 Disseminated *Mycobacterium avium* in AIDS,  
National Institute of Allergy and Infectious Disease,  
\$ 267,550.

1991-1994 Clofazimine Action in Mycobacteria,  
Heiser Program for Research in Leprosy, \$ 18,315.

1989-1990 Mechanism of Clofazimine Resistance in *Mycobacterium avium*,  
The Potts Foundation, \$ 5,300.

1987-1990 Epidemiology of Infection by Atypical Mycobacteria,  
National Institute of Allergy and Infectious Diseases,  
\$ 338,208.

1986-1987 Comparison of Mitochondrial DNA from Dairy and Beef Cattle Breeds,  
Biomedical Research Support Grant, \$ 2,100.

1983-1986 Epidemiology of Infection by Atypical Mycobacteria,  
National Institute of Allergy and Infectious Disease,  
\$ 503,410.

1983-1984 Proof of Relatedness of Mercury- and Cadmium-resistant Human and  
Environmental Isolates of *Mycobacterium avium*, *M. intracellulare*,  
and *M. scrofulaceum*. Biomedical Research Support Grant, \$ 2,000.

1982-1983 Improvement in Silage Fermentation Through Genetic Engineering of  
Lactobacilli, George A. Jeffreys and Co., Inc. \$ 1,800.

1980-1982 Analysis of the Ion-locus of *Escherichia coli* K-12,  
National Institute of Allergy and Infectious Disease,  
\$ 28,733.

1979-1982 Epidemiology of Infection by Atypical Mycobacteria,  
National Institute of Allergy and Infectious Diseases,  
\$ 350,098.

1977-1980 Membrane Involvement in Bacterial Conjugation,  
National Institute of Allergy and Infectious Diseases,  
\$ 51,101.

1977-1979 Epidemiology of Infection by Atypical Mycobacteria,  
National Institute of Allergy and Infectious Diseases,  
\$ 120,323.

1977-1978 Occurrence, Distribution, and Detection of Water-borne Bacterial  
Pathogens, Virginia Office of Water Resources Research, \$ 15,907.

## THESES AND DISSERTATIONS DIRECTED

Taylor, R.T. (M.S., Microbiology, 1998), "Chlorine, Chloramine, Chlorine Dioxide, and Ozone susceptibility of *Mycobacterium avium*".

Cowen, H.E. (M.S. Microbiology, 1998), "Rapid, Quantitative Assessment of *Mycobacterium avium* Susceptibility to Chlorine Based on the Firefly Luciferase Reporter Gene."

Jensen, D.M. (Ph.D., Microbiology, 1997), "Genetic Basis for Macrolide Resistance in *Mycobacterium avium*".

Stanek, J.E. (M.S., Microbiology, 1997), "Development of a Rapid Coliphage Detection Assay".

Eaton, T. (M.S., Microbiology, 1993), "Epidemiology of *Mycobacterium avium* complex infecting AIDS patients".

Via, L.E. (Ph.D., Microbiology, 1993), "Insertion sequence IS1141: Discovery, characterization and association with *Mycobacterium avium* colonial variation".

Jucker, M.T. (Ph.D., Microbiology, 1991), "Identification and characteristics of plasmid homology groups of *Mycobacterium avium*, *M. intracellulare*, and *M. scrofulaceum*".

Carlisle, G.C. (M.S. Microbiology, 1991), "Isolation and characterization of the major cytoplasmic membrane protein of *Mycobacterium avium*".

Warek, U. (M.S., Microbiology, 1990), "Mechanism of action of clofazimine in *Mycobacterium avium* and *Mycobacterium intracellulare*".

Stormer, R.S. (M.S. Microbiology, 1989), "Differences in antimicrobial susceptibility of pigmented and unpigmented colonial variants of *Mycobacterium avium*".

Pethel, M.L. (M.S. Microbiology, 1988), "Plasmid-influenced changes in *Mycobacterium avium* catalase".

Erardi, F.X. (M.S. Microbiology, 1986), "Characterization of cadmium susceptibility in *Mycobacterium avium*, *M. intracellulare* and *M. scrofulaceum*".

Mayer, B.K. (M.S. Microbiology, 1985), "Investigation of catalase and superoxide dismutase from *Mycobacterium avium*, *M. intracellulare*, and *M. scrofulaceum*".

Fry, K.W. (M.S. Microbiology, 1984), "Comparison of environmental and clinical strains of *Mycobacterium avium*, *M. intracellulare* and *M. scrofulaceum*".

Meissner, P.S. (Ph.D. Genetics, 1984), "Plasmids of *Mycobacterium avium*, *M. intracellulare* and *M. scrofulaceum*: isolation, use as epidemiological markers and role in heavy metal-resistance".

Cosby, W.M. (M.S. Microbiology, 1984), "Genetic engineering lactobacilli for improved alfalfa ensiling and citrate resistance".

Smith, R.T. (Ph.D. Microbiology, 1983), "Effect of temperature-induced membrane lipid phase transitions in recipient cells on conjugation in *Escherichia coli* K-12".

Brooks, R.W. (M.S. Microbiology, 1983), "Soil as a possible origin of organisms of the *Mycobacterium avium*, *M. intracellulare* and *M. scrofulaceum* (MAIS) complex in the southeastern United States".

Torres-Cabassa, A.S. (Ph.D. Genetics, 1982), "Genetic analysis and phenotypic characterization of Lon' mutants of *Escherichia coli* K-12".

Winfield, S.L. (M.S. Microbiology, 1979), "Genetic duplication in *Salmonella typhimurium*".

Ferguson, K.P. (M.S. Microbiology, 1978), "Identification of a mutation affecting plasmid establishment in *Escherichia coli* K-12".

Fiore, J.D. (M.S. Microbiology, 1978), "Studies of the utility of lectin-induced agglutination and bacteriophage adsorption in determining bacterial lipopolysaccharide composition".

#### TEACHING

**Genetics** - Sophomore introductory genetics course.

**Genetics Laboratory** - Sophomore laboratory course in genetic techniques.

**Microbiology** - Sophomore introduction to all aspects of microorganisms.

**Microbial Genetics** - A senior and graduate level course on the genetics of eukaryotic and prokaryotic microorganisms and their viruses.

**Molecular Biology** - A junior and senior level course on eukaryotic and prokaryotic molecular biology and recombinant DNA technology.

**Topics in Microbial Genetics** - Graduate, rotating topics course in microbial genetics.

**Molecular Biology Laboratory** - A senior and graduate level laboratory course in molecular biological techniques.

**Humanities and the Biological Sciences** - Course in the Humanities, Science, and Technology Program on issues surrounding genetic engineering.

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## ADMINISTRATIVE AND DEPARTMENTAL SERVICE

### University

Promotion and Tenure Committee, 1997-1999  
 Vice President, Faculty Senate, 1991-1992  
 Secretary/Treasurer, Faculty Senate, 1990-1991  
 Senator, Faculty Senate, 1989-1993  
 Chair, Faculty Senate Committee on Reconciliation, 1991-1994  
 Member, Laboratory & Hazardous Material Committee, 1995-present  
 Chair, Commission on University Support, 1992-1993  
 Chair, Commission on Faculty Affairs, 1991-1992  
 Chair, Interdepartment Genetics Program, 1981-1982  
 University Pre-Medical/Dental Advising Committee, 1975-1981

### College

Personnel Committee, College of Arts and Sciences, 1994-1996  
 Secretary, College of Arts and Sciences Faculty Senate, 1989-1990  
 Liberal Arts and Sciences Major Advisory Committee, 1980-1988  
 Humanities, Science and Technology Faculty, 1976-1990

### Department

Graduate Advisor, 1991-1996  
 Chair, Molecular Cell Biologist Search Committee, 1992-1993  
 Chair, Microbiologist Search Committee, 1994-1995  
 Member, Microbiologist Search Committee, 1995-1996  
 Member, Curriculum Committee, 1990-1993  
 Member, Graduate Selection Committee 1988-1989  
 Member, Graduate Diagnostic and Qualifying Examination Committee, 1984-1988  
 Member, Research Committee, 1974-1976  
 Member, Biology Department Head Evaluation Committee, 1975  
 Member, Safety Committee, 1975-1990  
 Member, Self Study Committee, 1975-1976  
 Chair, Undergraduate Awards Committee, 1979-1980

## PROFESSIONAL SERVICE

American Society for Microbiology  
 Nominee, Mycobacteriology Division Chair, 1992  
 Chair, Mycobacteriology Division Nominations Committee, 1990  
 Member, Mycobacteriology Division Program Committee, 1989  
 Member, Mycobacteriology Division Nominations Committee, 1988

## PUBLIC AND PERSONAL SERVICE

Episcopal Diocese of Southwestern Virginia  
 Member, Standing Committee, 1990-1993  
 Member, Executive Committee, 1986-1989  
 Chair, Grace House Mission Committee, 1979-1992  
 Blacksburg Chamber of Commerce  
 Vice President, Government Affairs, 1986-1989  
 Executive Board, 1984-1989  
 Faculty Advisor  
 Gamma Beta Phi (Scholarship, Service), 1988-1996  
 Sigma Alpha Epsilon (Fraternity), 1983-present